Name KEY

T01D01- Numbers in Chemistry
Scientific Notation, Metric (SI) System and Significant Figures
(or How to Enjoy using your Calculator)

1. Convert each of the following into scientific notation.

a. 91 500 000 9.15×10^{7}

b. 0.00000456 4.56×10^{-6}

c. 2 650 000 000 2.65×10^{9}

d. 186 000 1.86×10^{5}

e. 0.00000000567 5.67×10^{-9}

f. 602 300 000 000 6.023×10^{11}

2. Convert each of the following from scientific notation.

a. 2.65×10^{-3} 0,00265

b. 1.77×10^{8} 177000000

c. 8.66×10^{0} 8.66

d. 9.2×10^{-9} 0.0000000092

3. Solve each of the following and leave or put into scientific notation.

a. $(1.55 \times 10^{-3}) \times (8.66 \times 10^{-5})$ 1.34E-7

b. $(8.55 \times 10^{12}) / (5.55 \times 10^{-3})$ 1.54E15

g. $(8.0 \times 10^{6})(4.0 \times 10^{3})(3.0 \times 10^{-2}) / (3.0 \times 10^{4})(2.0 \times 10^{-2})$ 6.4E2

h. $1 \times 10^{3} + 1 \times 10^{2}$ 1100 => 1×10^{3} (sig figs)

4. Complete the following chart

Prefix	Symbol	Notation	Integer or Decimal Equiv
giga	G	10^{9}	1000 000 000
mega	M	10^{6}	1000 000
kilo	k	10^{3}	1000
deka	da	10^{1}	100
deci	d	10^{-1}	0.1
centi	c	10^{-2}	0,01
mili	m	10^{-3}	0.001
micro	μ	10^{-6}	0.000001
nano	n	10^{-9}	0.000000001
pico	p	10^{-12}	0.000000000001

5. Convert each of the following.

a. 3.6 L = 3.6E3 mL

$3.6\ L \times \frac{1000\ mL}{1\ L}$

b. 1.6 kg = 1.6E6 mg

$1.6\ kg \times \frac{1000\ g}{1\ kg} \times \frac{1000\ mg}{1\ g} =$

c. 1.85 km = 1.85E3 m

$1.85\ km \times \frac{1000\ m}{1\ km} =$

d. 145.6 g = 1.456E8 µg

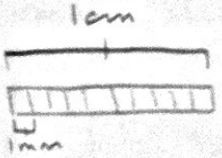
$145.6\ g \times \frac{1000000\ \mu g}{1\ g}$

e. 14.65 cm^3 = 1465E4 mm^3

$14.65\ cm^3 \times \frac{10^3\ mm^3}{1\ cm^3}$

$= 1.465E4$

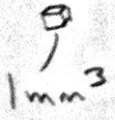
must cube the value b/c it's 3-dimentional



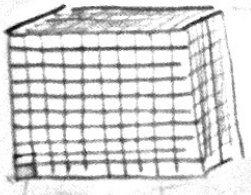
$10\ mm = 1\ cm$

$1000\ mm^3 = 1\ cm^3$

vs.



$1\ mm^3$



$1\ cm^3$